

WHAT IS CLAIMED IS:

1. An adenovirus particle, comprising a heterologous fiber or a portion thereof, whereby binding of the viral particle to dendritic cells is increased compared to a particle that expresses its native fiber, wherein:

the adenovirus (Ad) particle, except for the fiber, is from a subgroup C adenovirus; and

the fiber includes fiber from a subgroup D adenovirus for binding to dendritic cells, wherein the subgroup D adenovirus is selected from the group consisting of adenovirus serotype 8, 9, 10, 13, 15, 17, 19a, 19p, 20, 22-30, 32, 33, 36, 38, 39 and 42-49 or

the fiber comprises fiber from a subgroup B adenovirus for binding the virus to dendritic cells, wherein the subgroup B adenovirus is selected from the group consisting of adenovirus serotype 7, 11, 14, 21, 34 and 50.

2. A particle of claim 1, wherein:

the fiber is chimeric and comprises an N-terminal portion from a fiber of a subgroup C adenovirus; and

the N-terminal portion is sufficient to increase incorporation into the particle compared to in its absence.

3. The particle of claim 1, wherein the fiber is a chimeric fiber that includes a sufficient portion of a subgroup D adenovirus fiber to target dendritic cells.

4. The particle of claim 1, wherein the subgroup C virus is selected from the group consisting of adenovirus serotype 1, 2, 5, and 6.

5. The particle of claim 1, wherein the fiber is further modified to reduce any interaction with CAR.

6. The particle of claim 1, wherein the fiber is modified to reduce any interaction with heparin sulfate proteoglycans (HSP).

7. The particle of claim 1, wherein the capsid includes further modifications that alter interaction with α_v integrin.

8. The particle of claim 1, wherein the adenovirus (Ad) particle, except for the fiber, is from a subgroup C adenovirus; and the fiber is from Ad19p.

9. The particle of claim 8, wherein the Ad19p fiber comprises at least a sufficient number of amino acids set forth as SEQ ID NO. 34 to target the particle to dendritic cells.

10. The particle of claim 9, wherein the Ad19p fiber comprises at least a sufficient number of amino acids set forth as SEQ ID NO. 34 to target the particle to dendritic cells, but exhibits reduced binding to HSP compared to a subgroup C fiber.

11. The particle of claim 1, wherein the adenovirus (Ad) particle, except for the fiber, is from a subgroup C adenovirus; and the fiber is from Ad30.

12. The particle of claim 11, wherein the Ad30 fiber comprises at least a sufficient number of amino acids set forth as SEQ ID NO. 36 to target the particle to dendritic cells.

13. The particle of claim 11, wherein the Ad30 fiber comprises at least a sufficient number of amino acids set forth as SEQ ID NO. 36 to target the particle to dendritic cells, but exhibits reduced binding to HSP compared to a subgroup C fiber.

14. The particle of claim 11, wherein the fiber is chimeric and includes a portion of a subgroup C adenovirus.

15. An adenovirus particle of claim 1, comprising a mutation in the α_v integrin-binding region of the capsid, whereby binding to the integrin is eliminated or reduced.

16. The adenovirus particle of claim 8, wherein the Ad19p fiber is modified by replacing the N-terminal 15, 16 or 17 amino acids with the 15, 16 or 17 amino acids of an Ad2 or Ad5 fiber.

17. The adenovirus particle of claim 11, wherein the Ad30 fiber is modified by replacing the N-terminal 15, 16 or 17 amino acids with the 15, 16 or 17 amino acids of an Ad2 or Ad5 fiber.

18. The adenovirus particle of claim 5, wherein the CAR-binding region of the capsid that is modified is on a fiber knob.

19. The adenovirus particle of claim 18, wherein the fiber protein further comprises one or more further modifications that reduce or eliminate interaction of the resulting fiber with HSP.

20. The adenovirus particle of claim 19, wherein the capsid further comprising a ligand, whereby the particle binds to a receptor for the ligand.

21. The adenovirus particle of claim 20, wherein the ligand is included in the knob region of the fiber.

22. The adenovirus particle of claim 20, wherein the ligand is inserted into the fiber or it replaces a portion of the fiber.

23. A particle of claim 1, further comprising a heterologous nucleic acid in the genome thereof, wherein the heterologous nucleic acid encodes an antigen or a product that alters dendritic cell activity.

24. The particle of claim 23, wherein the antigen is a tumor antigen or an antigen from a pathogen.

25. An adenovirus particle, comprising a heterologous fiber or a portion thereof, whereby binding of the viral particle to heparin sulfate proteoglycans (HSP) is reduced or eliminated compared to a particle that expresses its native fiber, wherein:

the adenovirus (Ad) particle, except for the fiber, is from a subgroup C adenovirus; and

the fiber comprises fiber from Ad19p or Ad30, whereby HSP interaction is reduced.

26. A composition formulated for administration to a subject comprising a particle of claim 1.

27. A composition of claim 26 formulated for intramuscular, IV or parenteral administration.

28. A composition of claim 26 that is a vaccine.

29. An immunotherapeutic method, comprising administering a composition of claim 26 to a subject.

30. A method of delivering viral particles to dendritic cells, comprising:

contacting a composition with cells that comprise dendritic cells, whereby viral particles bind to dendritic cells, wherein the composition contains a viral particle of claim 1 or an adenovirus particle that comprises a fiber from Ad37 for targeting the particle to dendritic cells and the adenovirus (Ad) particle, except for the fiber, is from a subgroup C adenovirus; and

infusing the composition into a subject.

31. The method of claim 30, wherein the cells are removed from the subject prior to contacting.

32. The method of claim 30, wherein the cells comprise immune cells.

33. The method of claim 30, wherein the cells are bone marrow cells.

34. A nucleic acid molecule encoding a viral particle of claim 1.

35. The nucleic acid molecule of claim 34 that comprises an adenovirus vector.

36. The nucleic acid molecule of claim 34 further comprising heterologous nucleic acid.

37. A cell, comprising the nucleic acid molecule of claim 34.

38. The cell of claim 37 that is a dendritic cell.

39. A cell, comprising the nucleic acid molecule of claim 36.

40. The cell of claim 39 that is a dendritic cell.

41. A method of treatment, comprising administering a cell to a subject who has an immune cell disorder, cancer or an infection, wherein the cell is a cell of claim 38 or a dendritic cell containing an adenovirus particle that comprises a fiber from Ad37 for targeting the particle to

dendritic cells and the adenovirus (Ad) particle, except for the fiber, is from a subgroup C adenovirus.

42. The method of claim 41, wherein the subject is infected with a pathogen, has a tumor, an inflammatory disorder, allergies, asthma or an autoimmune disease.

43. A method of targeting an adenovirus particle to dendritic cells, comprising replacing all or a portion of the native fiber of the adenovirus with an adenovirus subgroup D fiber or an adenovirus subgroup B fiber.

44. The method of claim 43, wherein:

the adenovirus (Ad) particle, except for the fiber, is from a subgroup C adenovirus; and

the subgroup D adenovirus is selected from the group consisting of adenovirus serotype 8, 9, 10, 13, 15, 17, 19a, 19p, 20, 22-30, 32, 33, 36, 37, 38, 39 and 42-49 and the subgroup B adenovirus is selected from the group consisting of adenovirus serotype 3, 7, 11, 14, 16, 21, 34, 35 and 50.

45. The method of claim 43, wherein the subgroup C adenovirus is selected from the group consisting of adenovirus serotype 1, 2, 5, and 6.

46. The method of claim 43, wherein the fiber is further modified to reduce any interaction with CAR.

47. The method of claim 46, wherein the fiber is further modified to reduce any interaction with heparin sulfate proteoglycans (HSP).

48. The method of claim 47, wherein the capsid includes further modifications that alter interaction with α_v integrin.